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ABSTRACT

This booklet contains three articles that explain the importance of English, mathematics, and science subjects in every student's career preparation. For students with an interest in or aptitude for a subject, the articles explain the link between that subject and a number of careers. Each article also describes how people use English, mathematics, and science in everyday life and lists occupations requiring various levels of competence in these subjects. (KC)

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Core subjects and your career:
English and your career
Math and your career
Science and your career

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U.S. Department of Labor
Bureau of Labor Statistics

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Students often wonder why they must study subjects that seem unrelated to their career goals. Why does a future engineer need to take English classes? How does math help an air traffic controller direct planes? When do chefs or cooks use science and technology in the kitchen?

The three articles that follow—"English and your career," "Math and your career," and "Science and your career"—explain the importance of these subjects in every student's career preparation. For students with an interest or aptitude in a subject, the articles explain the link between that subject and a number of careers. Each article also describes how we use English, math, and science in everyday life and lists occupations requiring various levels of competence.

Of course, students should consult detailed references, such as the *Occupational Outlook Handbook*, in making their career decisions. But these articles may serve as reminders that a good foundation is essential for the framework that succeeds.

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Architects must describe their designs to clients in terms they can understand.

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Social workers need excellent interpersonal skills to help clients cope with problems, such as disabling illness, substance abuse, financial crisis, unplanned pregnancy, and child or spousal abuse.

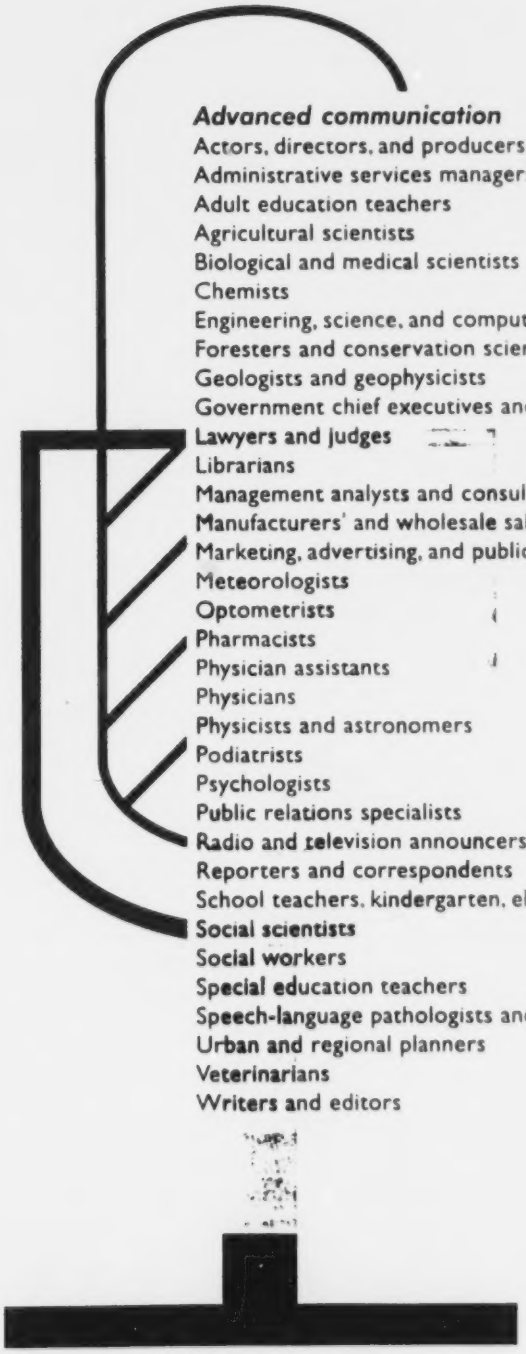
English and your career

by Nancy Saffer

Reading and writing are basic skills we begin learning at a young age. So why do we need to continue studying them in high school and beyond? Taking English classes improves our communication skills, which are essential to every job.

Communication is the ability to understand information other people give us and to have other people understand what we tell them. In addition to being fundamental for most jobs, the ability to communicate clearly and effectively can help us in every area of our lives. Every time we write a letter, make a phone call, or give someone instructions, we use our communication skills. Studying English helps us develop our reading, writing, speaking, and listening skills, all of which play some part in our everyday lives.

Nancy Saffer is an economist formerly with the Office of Employment Projections, BLS.



Advanced communication

Actors, directors, and producers
Administrative services managers
Adult education teachers
Agricultural scientists
Biological and medical scientists
Chemists
Engineering, science, and computer systems managers
Foresters and conservation scientists
Geologists and geophysicists
Government chief executives and legislators
Lawyers and judges
Librarians
Management analysts and consultants
Manufacturers' and wholesale sales representatives
Marketing, advertising, and public relations managers
Meteorologists
Optometrists
Pharmacists
Physician assistants
Physicians
Physicists and astronomers
Podiatrists
Psychologists
Public relations specialists
Radio and television announcers and newscasters
Reporters and correspondents
School teachers, kindergarten, elementary, and secondary
Social scientists
Social workers
Special education teachers
Speech-language pathologists and audiologists
Urban and regional planners
Veterinarians
Writers and editors

Taking English in high school and college

In high school English classes, most students study basics such as vocabulary, spelling, composition, reading, and grammar. Learning how to construct sentences and paragraphs lays the groundwork for writing effective letters, essays, term papers, and reports. English classes also include exposure to literature, which teaches students to analyze other people's words and provokes thought by providing insight into the human condition.

Advanced communication requires a strong ability to communicate both orally and in writing; college-level English courses are recommended.

College-level English courses are designed to refine the skills learned in high school. Subjects such as literature, writing, and grammar are taught as individual classes. These courses provide additional study and practice of communication.

How English relates to careers

You may think English classes only relate to a few occupations, such as writing or editing. But every job requires workers to understand instructions quickly and to explain problems to supervisors and other workers.

Good communication is essential for most occupations, even those that require little interaction with others. A problem cited by employers of engineers, for example, is that some technically competent workers are unable to explain what they are doing, to understand or explain what their part of a project is, or to relate their task to what others are doing.

Many occupations require frequent communication. Sales workers must be

Intermediate communication
Adjusters, investigators, and collectors
Architects
Clerical supervisors and managers
Construction and building inspectors
Construction and building managers
Designers
Employment interviewers
Financial managers
Health information technicians
Health services managers
Hotel managers and assistants
Industrial production managers
Insurance agents and brokers
Library technicians
Licensed practical nurses
Paralegals
Pharmacists
Physical therapists
Police, detectives, and special agents
Private detectives and investigators
Property managers
Real estate agents, brokers, and appraisers
Receptionists
Recreation workers
Recreational therapists
Registered nurses
Respiratory therapists
Restaurant and food service managers
Retail sales worker supervisors and managers
Retail sales workers
Secretaries
Securities and financial services sales representatives
Service sales representatives
Social and human service assistants
Travel agents
Travel guides

able to speak effectively both on the telephone and in person to present their company's products well. Lawyers and managers need to express themselves clearly and to analyze large amounts of information to be successful. Health care workers must be able to understand their patients' questions and concerns and to make patients understand how to maintain their health. Psychologists and psychiatrists must be able to listen and communicate effectively.

Intermediate communication requires the ability to accurately give and follow instructions, to persuade people to a particular point of view, and to write in an organized and grammatically correct manner; both high school and college English courses are helpful in developing these skills.

Developing communication skills

The best way to begin developing communication skills is to take high school English classes. Reading outside of class is also a good way to develop those skills and to build an effective vocabulary. In addition, getting involved in extracurricular activities improves communication because of the interaction required. Some activities target specific abilities: Joining the school newspaper or yearbook staff is a good way to work on writing skills; the debate team is ideal for developing speaking skills.

The accompanying lists show occupations that require advanced, intermediate, or basic communication skills. Advanced communication requires a strong ability to communicate both orally and in writ-

Basic communication

Bank tellers
Busdrivers
Cashiers
Correctional officers
Counter and rental clerks
Court reporters, medical transcriptionists, and stenographers
Dispatchers
Flight attendants
Funeral directors
General office clerks
Homemaker-home health aides
Hotel and motel desk clerks
Interviewing and new accounts clerks
Loan clerks and credit authorizers, checkers, and clerks
Nursing aides and psychiatric aides
Occupational therapy assistants and aides
Physical and corrective therapy assistants and aides
Postal clerks and mail carriers
Prepress workers
Preschool teachers and child care workers
Proofreaders
Receptionists
Reservation and transportation ticket agents and travel clerks
Routing and receiving clerks
Service representatives
Taxidrivers and chauffeurs
Telephone operators
Title searchers
Typesetters
Typists, work processors, and data entry keyers
Visual artists

ing; college-level English courses are recommended. Intermediate communication requires the ability to accurately give and follow instructions, to persuade people to a particular point of view, and to write in an organized and grammatically correct manner; both high school and college English courses are helpful in developing these skills. Basic communication requires the ability to interact with others and to follow simple oral and written instructions; high school English classes are helpful but not essential in developing this level of skill.

Basic communication requires the ability to interact with others and to follow simple oral and written instructions; high school English classes are helpful but not essential in developing this level of skill.

For more information on the level of education and training needed for specific occupations, consult the *Occupational Outlook Handbook*, available in most libraries, career centers, and placement offices and on the Internet at **http://stats.bls.gov/ocohome.htm**.

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Carpenters use algebra and geometry to calculate the proper angles at which to cut building materials.

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Economists, economics professors, and marketing research analysts describe economic and commercial activity using advanced statistical methods.

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Math and your career

by Nancy Saffer

Math skills help us cope with today's complex world. We use math to carry out everyday tasks such as balancing a checkbook, shopping for groceries, cooking, and creating a personal budget. Other important skills we learn from studying math include problem solving, analysis, and estimating. And math knowledge is essential for earning a living in many occupations, including most higher-paying occupations.

There are about 15,500 mathematicians employed in the United States, but millions of workers have jobs in which mathematics is a necessary part. In fact, almost all jobs require at least some understanding of basic mathematics. For example, carpenters must be able to measure lengths and angles when installing wood trim. Machinists need to understand and manipulate angles and dimensions. Loan officers must determine applicants' debt-equity ratios before approving mortgage applications. And math skills are required for any science, engineering, computer, and technical occupation.

Math is also an important part of a well-rounded education. Most high schools require students to take at least 2 years of math to graduate. And most colleges require some proficiency in math for all applicants, regardless of their intended majors.

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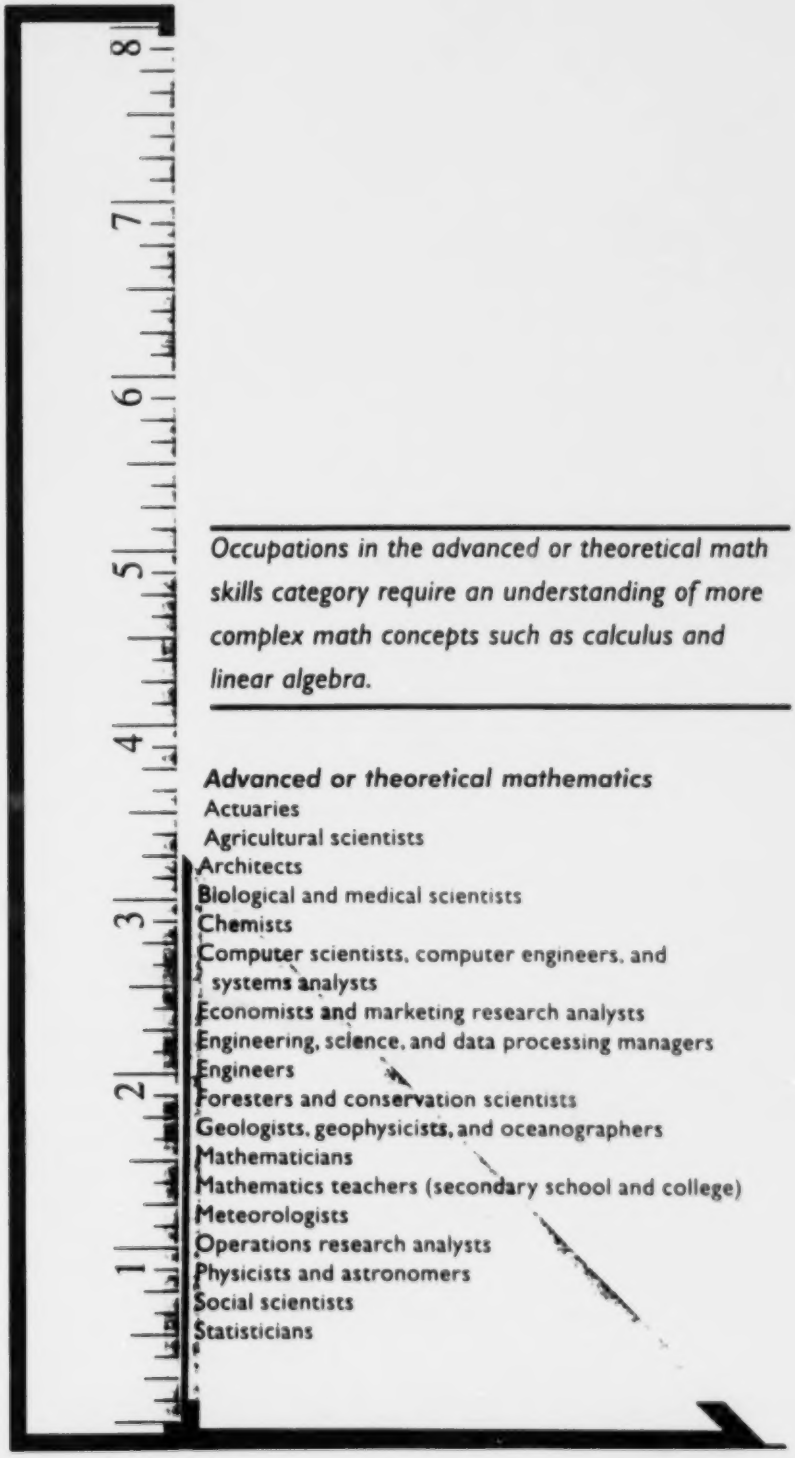

Occupations in the advanced or theoretical math skills category require an understanding of more complex math concepts such as calculus and linear algebra.

Advanced or theoretical mathematics

Actuaries
Agricultural scientists
Architects
Biological and medical scientists
Chemists
Computer scientists, computer engineers, and systems analysts
Economists and marketing research analysts
Engineering, science, and data processing managers
Engineers
Foresters and conservation scientists
Geologists, geophysicists, and oceanographers
Mathematicians
Mathematics teachers (secondary school and college)
Meteorologists
Operations research analysts
Physicists and astronomers
Social scientists
Statisticians

Careers for people interested in math

Although most occupations require basic math skills, some jobs rely on math more heavily than others. If you have taken many math courses, have a high aptitude for math, or major in math in college, you might be interested in some of the following occupations.

Actuaries. Actuaries answer questions about future risk, formulate investment strategies, and make pricing decisions. They may design insurance, financial, and pension plans by calculating probabilities of events such as sickness, disability, or death based on known statistics.

A bachelor's degree in mathematics or statistics is required for an entry-level position in a life or casualty insurance company. Applicants must be proficient in several mathematics subjects, including calculus, probability, and statistics, and have passed the beginning actuarial exams.

Mathematicians. Mathematicians use their mathematical knowledge and computational tools to create mathematical theories and techniques. They use these theories and techniques to solve economic, scientific, engineering, and business problems. Mathematicians often work with computers to solve problems, develop models, analyze relationships between variables, and process large amounts of data.

Mathematicians need a minimum of a bachelor's degree. People with bachelor's degrees may assist senior mathematicians or work on less advanced problems. Most mathematicians in the private sector need a master's or doctoral degree.

Operations research analysts. Operations research analysts are problem solvers who usually work for large organizations or businesses. They help these organizations operate more efficiently by applying mathematics principles to organizational issues. They work on problems

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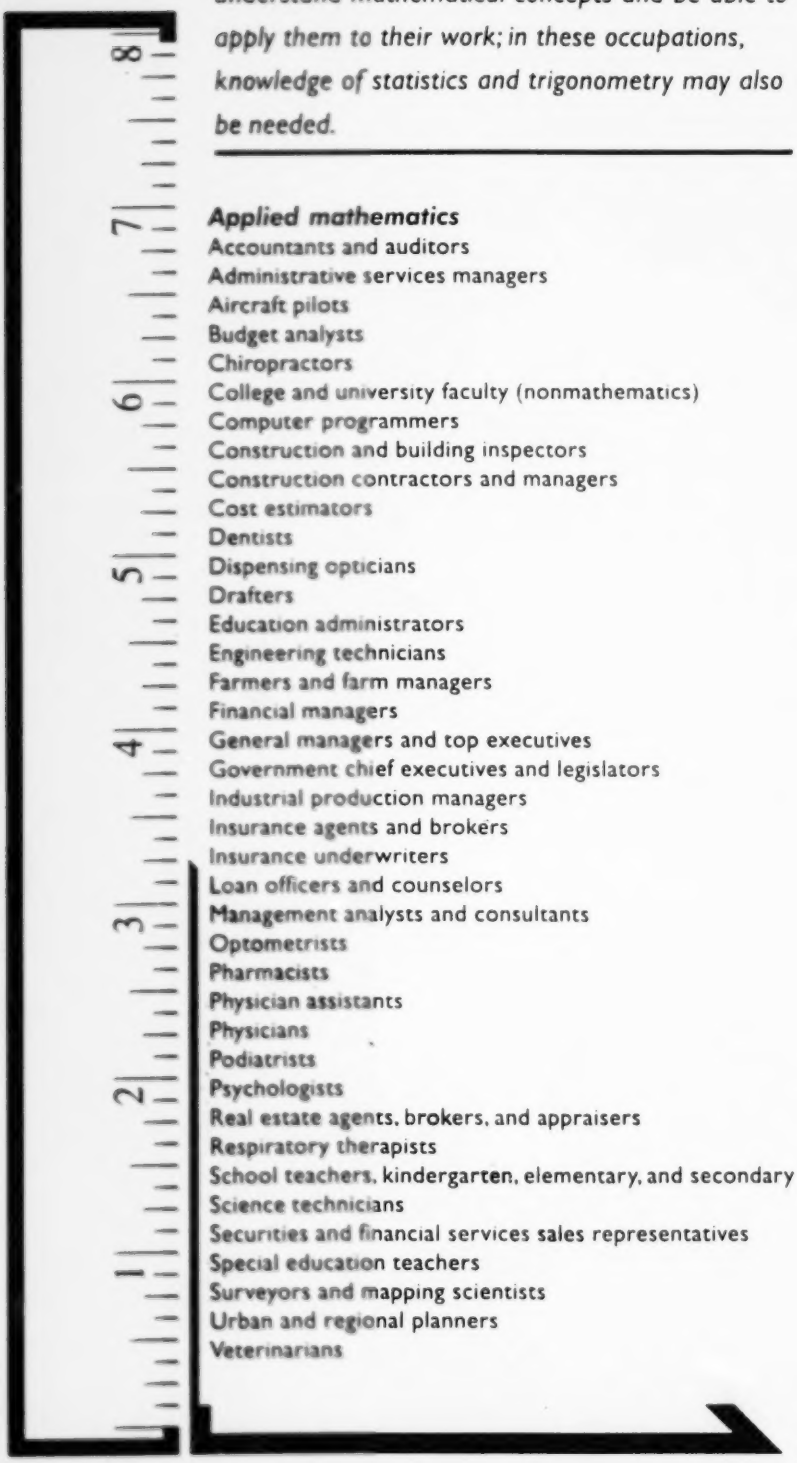
Occupations in the applied math skills category include those in which workers need to understand mathematical concepts and be able to apply them to their work; in these occupations, knowledge of statistics and trigonometry may also be needed.



Applied mathematics

Accountants and auditors
Administrative services managers
Aircraft pilots
Budget analysts
Chiropractors
College and university faculty (nonmathematics)
Computer programmers
Construction and building inspectors
Construction contractors and managers
Cost estimators
Dentists
Dispensing opticians
Drafters
Education administrators
Engineering technicians
Farmers and farm managers
Financial managers
General managers and top executives
Government chief executives and legislators
Industrial production managers
Insurance agents and brokers
Insurance underwriters
Loan officers and counselors
Management analysts and consultants
Optometrists
Pharmacists
Physician assistants
Physicians
Podiatrists
Psychologists
Real estate agents, brokers, and appraisers
Respiratory therapists
School teachers, kindergarten, elementary, and secondary
Science technicians
Securities and financial services sales representatives
Special education teachers
Surveyors and mapping scientists
Urban and regional planners
Veterinarians

such as facilities layout, personnel schedules, forecasting, and distribution systems. They often use mathematical models to explain how things happen within an organization and to determine how to organize things more effectively.

Most employers prefer to hire analysts who have a master's degree in operations research, industrial engineering, or management science.

Statisticians. Statisticians collect, analyze, and present numerical data and design, carry out, and interpret the results of surveys and experiments. Statisticians use mathematics techniques to predict things such as economic conditions or population growth, to develop quality control tests for manufactured products, and to help business managers or government officials make decisions and evaluate the results of new programs.

For most beginning jobs in statistics, a bachelor's degree in mathematics or statistics is the minimum requirement. Many research positions require a master's or doctoral degree.

Careers requiring strong math skills

Some other jobs require a strong background in math. The following occupations are among those in which strong math skills are very important.

Physical and life scientists. Physical and life scientists, including biologists, physicists, chemists, and geologists, work to discover the basic principles of how the earth, universe, and living things operate. The ability to use mathematical relationships to understand and describe the workings of nature is vital.

Most scientists need a doctoral degree in their field, especially those who work in basic research, but some scientists in applied research may need only a bachelor's or master's degree.

Social scientists. Social scientists perform research that helps us understand

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Occupations in the practical math category m require algebra and geometry in addition to general math skills.

Practical application of mathematics

Air traffic controllers
Aircraft mechanics, including engine specialists
Automobile mechanics
Automotive body repairers
Blue collar worker supervisors
Boilermakers
Broadcast technicians
Carpenters
Concrete masons and terrazzo workers
Diesel mechanics
Dietitians and nutritionists
Electric power generating plant operators and pow distributors and dispatchers
Electricians
Electronic equipment repairers
Elevator installers and repairers
Farm equipment mechanics
Funeral directors
General maintenance mechanics
Heating, air-conditioning, and refrigeration technici
Industrial machinery repairers
Inspectors, testers, and graders
Jewelers
Landscape architects
Machinists and tool programmers
Millwrights
Mobile heavy equipment mechanics
Motorcycle, boat, and small-engine repairers
Ophthalmic laboratory technicians
Photographers and camera operators
Purchasers and buyers
Sheetmetal workers
Stationary engineers
Tool-and-die makers
Water and wastewater treatment plant operators
Welders, cutters, and welding machine operators

how individuals and groups make decisions, exercise power, and respond to change. Many social scientists, especially economists, describe behavior with mathematical models. Also, much of social scientists' research depends on gathering and understanding statistics that describe human behavior.

As with physical and life scientists, many jobs involving research require a doctorate. However, many social science jobs involving applied research require only a bachelor's or master's degree.

Computer scientists and systems analysts. Workers in computer science occupations design computer systems and perform research to improve these systems. They may also program computers. Advanced mathematics skills might not be necessary for computer programming; however, training in mathematics helps develop an ability to think logically—a necessary qualification for working with computers.

Most of these workers have bachelor's degrees in computer science, information systems, or computer engineering. Some research positions require a master's or doctoral degree.

Engineers. Engineers use the theories and principles of mathematics to help solve technical problems. They also use mathematics to design machinery, products, or systems. Most entry-level engineering jobs require a bachelor's degree.

Science and engineering technicians. Science and engineering technicians use the principles and theories of science, engineering, and mathematics to solve technical problems in research and development, manufacturing, and other areas. Their jobs are more limited in scope and more practically oriented than those of scientists and engineers, but technicians rely heavily on mathematics techniques in their work.

There are many different ways of qualifying for a position as a science and engineering technician, but most jobs re-

Occupations in the general math skills category require basic arithmetic such as addition, subtraction, multiplication, and division.

General mathematics

Bank tellers
Billing clerks and billing machine operators
Bindery workers
Bookkeeping, accounting, and auditing clerks
Bricklayers and stonemasons
Brokerage clerks and statement clerks
Cashiers
Counter and rental clerks
Drywall workers and lathers
Glaziers
Interviewing and new accounts clerks
Library assistants and bookmobile drivers
Loan clerks and credit authorizers, checkers, and clerks
Manufacturers' and wholesale sales representatives
Medical assistants
Metalworking and plastic-working machine operators
Order clerks
Payroll and timekeeping clerks
Plasterers
Postal clerks and mail carriers
Precision assemblers
Prepress workers
Printing press operators
Private detectives and investigators
Reservation and transportation ticket agents and travel clerks
Roofers
Secretaries
Stock clerks
Structural and reinforcing ironworkers
Taxidrivers and chauffeurs
Teacher aides
Tilesetters
Traffic, shipping, and receiving clerks

quire at least some training beyond earning a high school diploma.

Other careers that require math skills

Math skills are useful in a number of other occupations. For example, most jobs in the financial industry use math skills. Bank tellers must have strong math skills to be both accurate and efficient. Accountants need proficiency in math to calculate and analyze numbers. Air traffic controllers need to understand maps and geometry when directing planes. Managers of all kinds use math skills; for example, hotel managers and assistants must be able to estimate costs for items the hotel needs to order, such as food and drinks.

Preparing for careers in math

The accompanying lists show occupations that require different levels of math skills: Advanced, applied, practical, or general. Occupations in the advanced or theoretical math skills category require an understanding of more complex math concepts such as calculus and linear algebra. Occupations in the applied math skills category include those in which workers need to understand mathematical concepts and be able to apply them to their work; in these occupations, knowledge of statistics and trigonometry may also be needed. Occupations in the practical math category may require algebra and geometry in addition to general math skills. Occupations in the general math skills category require basic arithmetic such as addition, subtraction, multiplication, and division.

For more information on the level of education and training needed for specific occupations, consult the *Occupational Outlook Handbook*, available in most libraries, career centers, and placement offices and on the Internet at **http://stats.bls.gov/ocohome.htm**.

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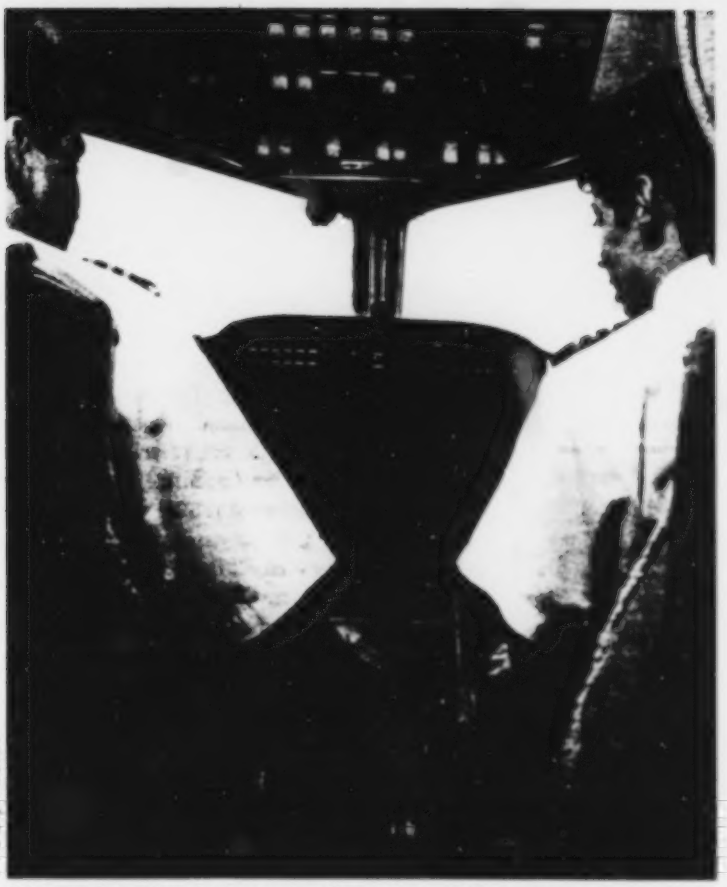

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Pilots apply math and science whey they assess weather reports and create flight plans.

© Kathy Sloane Photographic Arts

Physicans employ their extensive knowledge of biology and biochemistry in treating illness.

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Science and your career

by Nancy Saffer

Studying science helps us understand the discoveries that affect our daily lives. Every time we use a telephone, television, or computer, we are using a product of science. We use our knowledge of science when making decisions about our health and diet. Even common hobbies, such as cooking, gardening, and photography, rely on scientific principles.

By studying science, we learn how the universe works; we learn to observe, classify, measure, predict, interpret, and communicate data; and we develop the ability to think logically and solve problems. The skills and knowledge that come from studying science are important in many occupations.

There are almost 400,000 scientists employed in the United States, but 21 million workers use science on the job. For example, mechanics use scientific procedures when repairing or testing equipment. Physical therapists use biology and physics to rehabilitate patients. Journalists use scientific knowledge when writing about technology, health, or the environment. And scientific problem solving skills are necessary for most computer occupations.

Science courses are also important if you want an advanced education. College admissions officers

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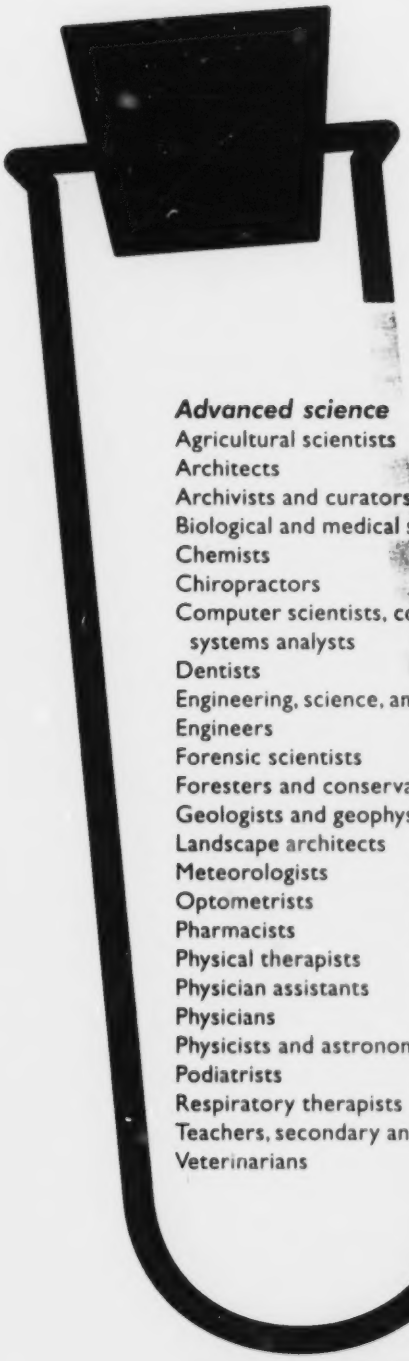

Advanced science
Agricultural scientists
Architects
Archivists and curators
Biological and medical scientists
Chemists
Chiropractors
Computer scientists, computer engineers, and systems analysts
Dentists
Engineering, science, and computer systems managers
Engineers
Forensic scientists
Foresters and conservation scientists
Geologists and geophysicists
Landscape architects
Meteorologists
Optometrists
Pharmacists
Physical therapists
Physician assistants
Physicians
Physicists and astronomers
Podiatrists
Respiratory therapists
Teachers, secondary and college (sciences)
Veterinarians

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often favor individuals who have taken science classes. Many colleges require at least 2 years of high school science courses, regardless of your intended major. If you want to be admitted into scientific and technical programs, you will probably need 3 or 4 years of high school science.

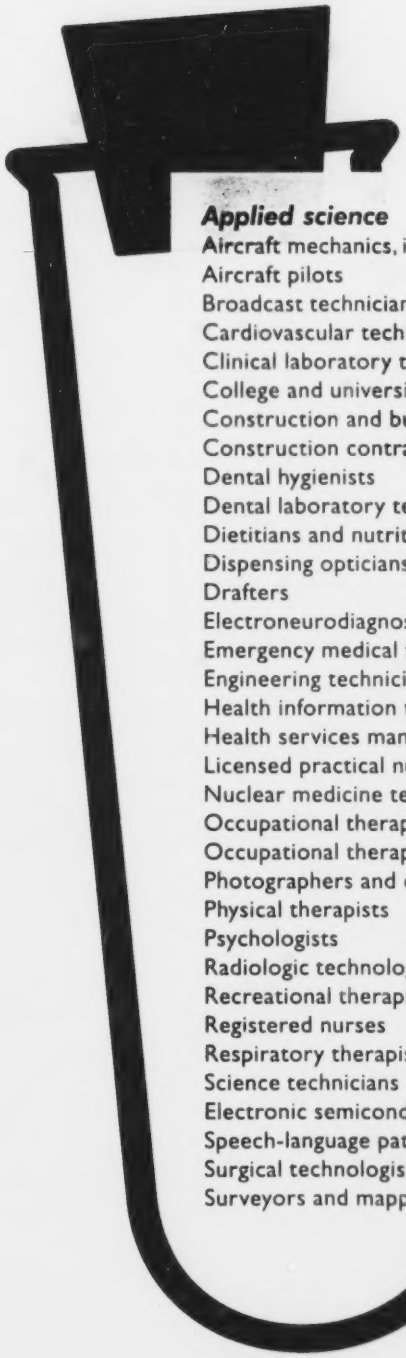
Careers for people interested in science

Although science skills are helpful in many occupations, some occupations rely heavily on science. If you have a strong interest in science, you might want to consider one of the following occupations.

Advanced science occupations require a thorough knowledge of scientific principles; a bachelor's degree with a number of college science courses is usually the minimum requirement. But many of these positions require a master's or doctoral degree.

Biologists. Biologists study living organisms and their relationship to each other and the environment. Most biologists specialize in one branch of biology—for example, microbiology, the study of microscopic organisms; zoology, the study of animals; or botany, the study of plants. These branches are then subdivided. For example, types of zoologists include mammalogists, who study mammals; ichthyologists, who study fish; ornithologists, who study birds; and herpetologists, who study reptiles and amphibians.

Chemists. Chemists search for new chemicals and find uses for existing ones. Their discoveries might be used to pro-



Applied science

Aircraft mechanics, including engine specialists
Aircraft pilots
Broadcast technicians
Cardiovascular technologists and technicians
Clinical laboratory technologists and technicians
College and university faculty
Construction and building inspectors
Construction contractors and managers
Dental hygienists
Dental laboratory technicians
Dietitians and nutritionists
Dispensing opticians
Drafters
Electroneurodiagnostic technologists
Emergency medical technicians
Engineering technicians (all specialties)
Health information technicians
Health services managers
Licensed practical nurses
Nuclear medicine technologists
Occupational therapists
Occupational therapy assistants and aides
Photographers and camera operators
Physical therapists
Psychologists
Radiologic technologists
Recreational therapists
Registered nurses
Respiratory therapists
Science technicians
Electronic semiconductor processors
Speech-language pathologists and audiologists
Surgical technologists
Surveyors and mapping scientists

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duce medicines or create stronger building materials. Some chemists specialize in one branch of chemistry. Biochemists, for example, study the chemical composition of living things. Physical chemists examine the physical characteristics of atoms, molecules, and chemical reactions.

Physicists. Physicists study the behavior of matter, the generation and transfer of energy, and the interaction of matter and energy. They study areas such as gravity, nuclear energy, electromagnetism, electricity, light, and heat. They might examine the structure of the atom, or design research equipment such as lasers. Physicists might also work in inspection, testing, or other production-related jobs.

Applied science occupations require workers to understand scientific principles and apply them to their work; some posthigh school science training is needed.

Agricultural scientists. Some types of scientists work to improve agriculture. Crop scientists study the genetic breeding and management of field crops. Soil scientists use soil physics, soil chemistry, and soil microbiology to enhance soil fertility and the growth of plants. Agronomists develop practical applications for discoveries in plant and soil science to produce high quality food.

Other scientists. There are many other branches of science. Geologists study the history and composition of our planet, including volcanoes and earthquakes. Oceanographers study the oceans and their movements. Meteorologists study the atmosphere, and some make weather predictions. Astronomers study the universe, trying to gain knowledge about the stars, planets, and galaxies.

Practical application of science

Automotive body repairers
Automotive mechanics
Barbers and cosmetologists
Boilermakers
Chefs, cooks, and other kitchen workers
Dental assistants
Diesel mechanics
Electricians
Electronic equipment repairers
Elevator installers and repairers
Farm equipment mechanics
Farmers and farm managers
Firefighting occupations
Fishers, hunters, and trappers
Funeral directors
General maintenance mechanics
Heating, air-conditioning, and refrigeration technicians
Home appliance and power tool repairers
Industrial machinery repairers
Jewelers
Landscaping, groundskeeping, nursery, greenhouse, and lawn service occupations
Machinists and tool programmers
Medical assistants
Millwrights
Mobile heavy equipment mechanics
Motorcycle, boat, and small-engine mechanics
Nursing aides and psychiatric aides
Ophthalmic laboratory technicians
Pest controllers
Pharmacy technicians
Photographic process workers
Physical and corrective therapy assistants
Plumbers and pipefitters
Prepress workers
Printing press operators
Stationary engineers
Structural and reinforcing iron workers
Tool-and-die makers
Urban and regional planners
Vending machine servicers and repairers
Water and wastewater treatment plant operators
Water transportation occupations
Welders, cutters, and welding machine operators

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Although many scientists specialize, most need to have knowledge in more than one branch of science. Agronomists, for example, combine their knowledge of biology, geology, chemistry, and mathematics to find better ways to grow food and conserve soil. They may also work closely with other scientists, such as microbiologists, biochemists, meteorologists, and entomologists.

Engineers. Engineers use the principles and theories of chemistry, physics, and mathematics to solve practical problems. They develop new products and improve systems and processes. Engineers design computers, generators, helicopters, spacecraft, and other devices. Engineering has many specialties. The largest are mechanical engineering, electrical and electronics engineering, and civil engineering.

Practical application occupations require familiarity with the basic principles of biology, chemistry, or physics; high school courses in these areas should be sufficient.

Mechanical engineers design and develop power-producing machines, such as internal combustion and rocket engines. Others design and develop power-using machines, such as refrigeration systems.

Electrical and electronics engineers design, develop, test, and supervise the production of electrical equipment. This includes computers, automobile ignition systems, and wiring and lighting in buildings. They also design communications, video, and radar equipment.

Civil engineers design and supervise the building of roads, bridges, tunnels, buildings, airports, harbors, and water supply, flood control, and sewage systems.

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Understanding the physical properties of materials helps firefighters combat different types of fires.

Technicians and technologists. Science and engineering technicians carry out the plans of scientists and engineers—setting up experiments, recording results, or testing product quality. They may also design simple experiments. These workers use testing and measuring devices and have a solid understanding of laboratory techniques.

Other technician occupations include drafters, who prepare technical drawings of structures and products; broadcast technicians, who install, repair, and operate radio and television equipment; and air-conditioning, refrigeration, and heating technicians.

Other careers that use science

Science skills are useful in many other occupations. For example, there are numerous occupations in health care, and all require knowledge of biology and other sciences. Physicians, nurses, dentists, veterinarians, and emergency medical technicians are just a few of the health occupations that require an understanding of science.

Many workers use chemistry and physics in their work. Chefs and cooks use chemistry when creating recipes and preparing food, because cooking ingredients are chemicals. Dietitians and nutritionists are also concerned with chemical content of foods. Farmers and horticulturists use fertilizers and pesticides, the products of chemistry. Electricians apply the principles of physics when wiring a building, and aircraft pilots use physics and meteorology to plot flight paths and fly planes.

Preparing for careers in science

Careers in science require orderly thinking, systematic work habits, and perseverance. If you are a student who is interested in scientific and technical careers, you should take as many science classes in high school as possible. Basic courses in earth science, biology, chemistry, and physics will form a solid foundation for further study. A strong background in mathematics is also important for those who want to pursue scientific, engineering, and technology-related careers.

The lists show occupations requiring different levels of scientific skill: Advanced, applied, or practical application. Advanced science occupations require a thorough knowledge of scientific principles; a bachelor's degree with a number of college science courses is usually the minimum requirement. Many of these positions require a master's or doctoral degree. Applied science occupations require workers to understand scientific principles and apply them to their work; some posthigh school science training is needed. Practical application occupations require familiarity with the basic principles of biology, chemistry, or physics; high school courses in these areas should be sufficient.

For more information on the level of education and training needed for specific occupations, consult the *Occupational Outlook Handbook*, available in most libraries, career centers, and placement offices and on the Internet at **http://www.stats.bls.gov/ocohome.htm.** ∞

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